

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-42 (Cancelled)

43. (Currently Amended) A membrane-based concentrating device for rapidly concentrating an aqueous solution herbal extract, the device comprising:

- (a) a solution container for containing herbal extracts;
- (b) a permeate solution container in fluid connection with the solution container and separated therefrom by a filter vessel and a pressure pump, wherein a solution from the solution container enters the filter vessel to remove suspended particles from the solution from the solution container prior to entering the pressure pump;

said filter vessel having:

- (b1) an air bleeding valve to remove any trapped air in the filter;
- (b2) a fabric filter for clearing the solution;
- (c) a membrane module in fluid connection with the filter vessel for receiving clarified solution from the fabric filter wherein the permeate is separated and the concentrate is recycled to the solution container;

said membrane module comprising a plastic body housing having,

- (c1) an inlet connected to the filter vessel for introducing the clear solution;
a concentrate outlet for recycling the extract to the solution container;
- (c2) a permeate outlet connected to the permeate solution container for sending permeate to the permeate solution container;
- (c3) a seal to separate the permeate from the concentrated extract at the outlets of the module; and
- (c4) a by pass seal for allowing the extract solution to pass through the membrane;

wherein the membrane module has a length to diameter ratio of about 6

to 1 and houses a spiral thin film composite membrane having an over all thickness ranging between 130 to 170 microns, the spiral thin film composite membrane allowing water to pass therethrough while retaining other components and allowing solution to [[and]] circulate in the device, ~~while retaining other components~~, and wherein the membrane module is adapted to be fluidly connected with a water reservoir and an air compressor;

the device further comprising:

six solenoid valves which are configured and controlled so as to control fluid communication between the water reservoir and the air compressor and the membrane module, and to control the direction of flow of permeate, concentrated extract, water and compressed air respectively during concentrate, drain and wash modes; and

a back pressure regulator associated with at least one of the six solenoid valves for relieving back pressure in excess of a predetermined limit.

44. (Previously Presented) The device as claimed in claim 43, wherein the device maintains stability of the solution by functioning at about 25⁰C.

45. (Previously Presented) The device as claimed in claim 43, wherein the device concentrates the aqueous solution without frothing.

46. (Previously Presented) The device as claimed in claim 43, wherein the concentrate retains all constituents of the solution.

47. (Previously Presented) The device as claimed in claim 43, wherein the solution container is a vertical container or a reservoir for continuous supply of feed.

48. (Previously Presented) The device as claimed in claim 43, wherein the permeate container with provided with an outlet valve continuously removing water.

49. (Previously Presented) The device as claimed in claim 43, wherein the filter vessel coupled with the air bleeding valve to remove suspended particles and trapped air is configured to allow clear solution to flow into the membrane module and to prevent_ froth formation respectively.

50. (Previously Presented) The device as claimed in claim 43, wherein the solenoid valves are configured for changing a flow path of aqueous solution/ water during the drain/ wash mode for operation.

51. (Previously Presented) The device as claimed in claim 43, wherein the diaphragm type pressure pump is installed to attain adequate pressure for continuous flow of aqueous solution.

52. (Previously Presented) The device as claimed in claim 43, wherein the control panel coupled with an ON and OFF switch is configured for concentrating the aqueous solution, and continuously washing the membrane for optimum life.

53. (Previously Presented) The device as claimed in claim 43, wherein the aqueous solution container has length and diameter in the ratio of about 4:1.

54. (Previously Presented) The device as claimed in claim 43, wherein the permeate container has length and diameter in the ratio of about 4:1.

55. (Cancelled)

56. (Withdrawn) An improved process of speedier and effective concentrating of the aqueous solution up to about 95% using a membrane-based device, said method comprising the steps of:

- a. feeding the aqueous solution into the aqueous solution container,
- b. filtering the fed solution to remove suspended particles,
- c. passing the resultant filtered solution into a membrane module having length to diameter ration of about 6 to 1 and over all thickness ranging between 130 to 170 microns;
- d. segregating permeate and concentrate in the membrane module, and
- e. recycling the concentrate multiple times to obtain the highly concentrated final concentrate.

57. (Withdrawn) The process as claimed in claim 56, wherein the process is conducted at room temperature, preferably about 25°C to maintain stability of the solution.

58. (Withdrawn) The process as claimed in claim 56, wherein the concentrate of the aqueous solution is without frothing.

59. (Withdrawn) The process as claimed in claim 56, wherein the concentrate retains all constituents of the solution.

60. (Withdrawn) The process as claimed in claim 56, wherein the vertical container works as a reservoir for continuous supply of feed.

61. (Withdrawn) The process as claimed in claim 56, wherein the permeate container with outlet valve continuously removes water.

62. (Withdrawn) The process as claimed in claim 56, wherein the filter vessel coupled with air bleeding valve enables removal of suspended particles and trapped air, respectively, thus, allows only clear solution to flow into the membrane module.

63. (Withdrawn) The process as claimed in claim 56, wherein the solenoid valves helps changing the path of aqueous solution/ water during the drain/ wash mode for operation.

64. (Withdrawn) The process as claimed in claim 56, wherein the pressure pump enables adequate pressure to be attained for continuous flow of aqueous solution.

65. (Withdrawn) The process as claimed in claim 56, wherein the control panel coupled with ON and OFF switch helps concentrating the aqueous solution, and continuously washing the membrane for optimum life.

66. (Withdrawn) The process as claimed in claim 56, wherein the aqueous solution container has length and diameter in the ratio of about 4:1.

67. (Withdrawn) The process as claimed in claim 56, wherein the permeate container has length and diameter in the ratio of about 4:1.

68. (Withdrawn) The process as claimed in claim 56, wherein the solenoid valves controls the direction of the flow in modes selected from a group comprising concentrate mode, drain mode, and wash mode.

69. (Withdrawn) The process as claimed in claim 56, wherein the process eliminates the hold-up volume.

70. (Withdrawn) The process as claimed in claim 56, wherein the process minimizes the membrane fouling.

71. (Withdrawn) The process as claimed in claim 56, wherein the process prevents contamination of the solution.

72. (Previously Presented) The device as claimed in claim 43, wherein the solenoid valves are coupled with a control panel and an ON and OFF switch for operating the device in the concentrate, drain and wash modes.

73. (Withdrawn) The process as claimed in claim 56, wherein the process further comprises steps of supplying the compressed air to the membrane module through the filter to pressurize the concentrate hold up in the membrane module.

74. (Previously Presented) The device as claimed in claim 43, wherein the six solenoid valves are housed in a housing.

75. (Previously Presented) The device as claimed in claim 43, wherein housing is portable.

76. (Previously Presented) The device as claimed in claim 43, wherein the solenoid valves are arranged in a row, side-by-side in a housing which also houses a diaphragm type pressure pump via which extract solution is pumped to the filter vessel, the housing also housing with the

membrane module via which the permeate is separated from the permeate solution, the back pressure regulator and the fabric filter.

77. (Previously Presented) The device as claimed in claim 76, wherein the housing also houses the air bleeding valve which can be opened to remove any trapped air in the system; the inlet for introducing the clear herbal extract solution; the concentrate outlet for recycling the extract to the extract container; the permeate outlet for sending the water to the permeate container; the seal; and the by-pass seal.